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Phyllosticta solitaria E. and E. Heretofore unreported in state, but known.
Apple.

- **Heterodera radicum*, root knot on Madagascar periwinkle.
- **Heterodera radicum*, root knot on marguerite.
- **Heterodera radicum*, root knot on cocksecomb.
- **Heterodera radicum*, root knot on phlox.
- **Heterodera radicum*, root knot on parsley.
- **Pleosphærulella briosiana* Pol., alfalfa leaf-spot disease.

* New to science.

REPORTED IN 1915.

Chlorosis of red cedar, nonparasitic. Hays.
Phyllosticta medicaginis, alfalfa leaf-spot disease. All over state.
 Raspberry curl, nonparasitic disease. Troy, Wathena.
Bacillus tracheiphilus, wilt of cucumber.
Phoma sp., stem disease of alfalfa. Manhattan, Hays, Garden City.
 Sorghum-root disease. Undertermined. Manhattan.
Physoderma sp., on corn. Manhattan.
Fusarium sp., corn-root rot.
Fusarium wilt, watermelon.

REPORTED IN 1916-1917.

Soil rot or pox disease of sweet potato.
Coniothyrium sp., apple-tree canker.
 **Alternaria* sp., black spot of pepper.
 **Botrytis* sp. Causes severe injury to flowers and foliage of geranium plants.
 *Bacterial disease of lettuce in greenhouse.
 *Bud blight of sorghums. Fungous disease.
 Seeding blight of sorghums. Fungus.

* New to science.

Plant-disease Survey Report for Kansas, 1918.

L. E. MELCHERS, Collaborator, United States Department of Agriculture and State Plant Pathologist.

CEREAL DISEASES.

A rather complete survey of the state was made by the Office of Cereal Investigations in coöperation with the Office of Plant Disease Survey; therefore, the reports herein which consider cereal diseases are those in addition to the observations made by these offices.

BARLEY DISEASES.

In a general way, barley diseases were present in about the same amounts as usual. In most fields where the seed had not been treated from 2 to 5 per cent of covered smut and the same percentage of loose smut were found. These are invariably present in all barley fields.

There was practically no evidence of leaf rust of barley in the state the past season, and no stem rust was called to the collaborator's attention. None of the leaf spots were found occurring on this crop.

OAT DISEASES.

Stem rust of oats occurred to a slight extent during the fall of 1918 on volunteer plants. No stem rust was called to the collaborator's attention during the regular season.

Leaf rust was rather uncommon the past season. In most fields there was scarcely a trace to be found.

Covered and *loose smut* were prevalent in Kansas the past season. The loose smut generally predominates, but this year there seemed to be a considerable amount of covered smut. Campaigns for seed treatment were most effective the past season, and it is estimated that about 50 per cent of the oat seed planted was treated for smut.

Bacterial blight. A few cases of bacterial blight of oats was called to the writer's attention. Apparently this was not serious the past season.

RYE DISEASES.

Leaf rust. There was no evidence of leaf rust nor smut in the rye crop of the fields inspected. Ergot was not called to the collaborator's attention. The crop was practically disease free the past season.

WINTER WHEAT.

Loose smut can be reported from practically every section of the state where wheat is grown. The percentage does not seem to be on the increase. It varies from a mere trace to a quarter or half of one per cent in the majority of the fields. Although widely spread, it is not regarded as serious.

Covered smut. This disease was more common the past season than it has been for a number of years in some of the eastern counties and the north-eastern part of the state, where many fields were badly diseased. The percentage ran as high as 40 in some fields, although 5 or 10 per cent was in the great majority of fields where smut occurred. Johnson county in particular had a great deal of covered smut. Considerable seed treatment was carried out this fall (1918), and there will probably be less indication of bunt next year.

Leaf rust. This disease was present in practically every wheat field. It varied from a few per cent to 85 per cent, using the scale as advised by the Office of Cereal Investigations. There was apparently no damage to the crop from this rust.

Stem rust. This was very uncommon except in mere traces in some fields in the state. The past fall (1918), although most favorable for stem rust to start, the wheat crop became covered with a blanket of snow, with practically no indication whatsoever of stem rust in the crop. In September and October there were slight traces here and there on volunteer wheat or in the fall-sown crop, but during October, November and December this had practically all died out, with no indications of spreading.

Black chaff disease.* This disease was reported from about twelve different

* It is desirable to call attention to the fact that this disease has been sadly confused with the blackening of the glumes of wheat caused by *Septoria*. Some of the states have sent in reports in which it is known by the writer that the disease was due to *Septoria* and not the bacterial black chaff.

counties in the state this year. It probably occurred in traces in a great many others. No indications of damage to the crop occurred.

Powdery mildew. One report of this disease on wheat came from Cowley county. No injury resulted.

Septoria. This disease was practically absent from the mature crop, but due to the wet fall which occurred in Kansas, considerable leaf spot due to the *Septoria* occurred. This in all probabilities will cause some infection on the mature plants if a wet spring occurs.

ALFALFA.

Phoma sp. This was reported for the first time by the writer in 1915, and has been present more or less each season. It was present to a slight extent the past season. It causes black lesions on the stems, which if severe cause the death of shoots.

Leaf spot (Pyrenopeziza medicaginis). This disease was reported from Marion county the past season, where it appeared to be fairly common. It was not common throughout the state.

Alfalfa-root rot (Rhizoctonia violaceæ). This disease was reported from Osage county. It is known to occur in several sections of the state.

CORN.

Rust. This occurred in many sections of the state to a greater or less extent. No injury resulted.

Corn smut varied anywhere from 1 to 40 per cent in various fields. A conservative estimate of the total crop lost by smut for 1918 is about 8 per cent.

Corn-root rot (Fusarium sp.). This was fairly common throughout the state. It was reported the past year in Anderson, Lyon and Riley counties. Perhaps 10 per cent of the total crop was lost by this disease, although it is possible that this percentage is low.

SORGHUM DISEASES.

Head smut occurred in slight amounts in Riley county. This disease is not on the increase in this state.

Kernel smut. This varied from a few per cent to 25 or 30 per cent of the crop in many fields; perhaps an average of 10 per cent loss of the total crop would be a conservative estimate. Considerable seed treatment was carried out successfully.

VEGETABLE DISEASES.

BEAN.

Bacterial blight is reported in Coffey and Riley counties. From 1 to 2 per cent appeared.

Mosaic disease. This disease occurred in numerous parts of the state fairly abundantly. It seems to be on the increase in this state.

CUCUMBERS.

Bacterial wilt. This was reported in a few counties in the state. From 1 to 2 per cent injury resulted due to this disease. For the most part the weather conditions were so unfavorable that the crop could not mature.

BEETS.

Beet leaf spot. This disease is more or less common wherever the beets are grown.

Beet scab. This disease was reported from one place in Kansas. The county is not known at this time.

Crown gall. One case of crown gall was called to the collaborator's attention. This came from the same region where scab was reported.

CABBAGE.

Black rot was reported in Lyon and Riley counties, and from 5 to 25 per cent injury resulted.

Leaf spot (*Alternara brassicæ*). About 1 per cent of the crop was injured by this disease in Riley county.

CELERY.

Root knot, or *eel worm* occurred in Reno county in the fields in the neighborhood of greenhouses. It seems to live over winter in this state as past reports have indicated.

EGGPLANT.

Macrosporium sp. A more or less dry rot due to *Macrosporium* occurs on the eggplant, causing large sunken areas.

POTATO.

Early blight. Trace to 20 per cent occurred in the vicinity of Riley county. It was not common in the state.

Wilt and dry rot occurred in many fields in the state. It was particularly abundant in Riley county. In Atchison and Anderson counties it occurred slightly. It no doubt appeared in many other fields in the state.

Rhizoctonia. This disease occurred in practically every field in the state where potatoes were planted with northern seed. The average loss for the state was perhaps 15 per cent. It is a serious disease in Kansas.

SWEET POTATO.

Pox disease is present in practically every field where sweet potatoes are grown. It has only been in this state about three years. The injury in many fields is very marked.

Black rot. This disease was more abundant the past year in the sweet-potato districts than usual. Perhaps from 1 to 3 per cent loss occurred.

Stem rot. The average loss from this disease in the state is perhaps 10 to 15 per cent.

Storage rots. Twenty per cent of the crop is frequently lost due to *Rhizopus* and closely related soft rots.

FRUIT DISEASES.

APPLE.

Blister canker. This disease occurs in practically every old orchard in the state. Anywhere from 1 to 80 per cent of the trees are dying in different orchards. It has been reported the past season in Rooks, Riley, Morris, Washington, Chase, Kingman, Greenwood, Labette, Cherokee, Sumner, Bourbon, Crawford, Sedgwick and Reno counties.

Black rot. This disease was rather rare in Kansas. The loss for 1918 was perhaps less than one-fifth of 1 per cent.

Blotch was common in every orchard in the state. The average loss to the fruit crop for 1918 was perhaps 10 per cent.

Rust was very rare in the state and only occurred on apple foliage.

Fire blight caused perhaps an average of 2 per cent loss for the state.

Apple canker (*Leptosphaeria coniothyrium*) occurred in Jefferson, Wabaunsee, Doniphan and Sumner counties. Perhaps 10 per cent of the young trees in these counties were affected, with a loss of about 3 per cent of the trees.

Sun scald and *winter injury* made their appearance in some regions, but with no serious loss.

Apple scab was reported in Cherokee, Miami, Sedgwick and Greenwood counties. Less than one-fifth of 1 per cent injury resulted.

BLACKBERRY.

Leaf spot. This disease occurred to a greater or less extent in all patches of blackberries.

PLUM.

Brown rot was common on the trees in all sections of the state.

Plum pockets reported from Kingman and Greeley counties, where it was fairly common.

RASPBERRY.

Anthracnose was common in Doniphan county, from 1 to 10 per cent injury resulting in various patches.

Cane blight was common in Doniphan and Riley counties. Perhaps 10 per cent of the crop was injured by this disease.

WATERMELON.

End rot (*Diplodia*). Perhaps 8 per cent of the crop was lost in Riley and Sedgwick counties due to this disease.

Anthracnose was reported in various fields in Riley county. From 1 to 2 per cent loss occurred.

Fusarium end rot. In Riley county 8 per cent of the fruit seemed to be affected.

GENERAL CONCLUSIONS.

In all, the plant disease situation for Kansas was nothing out of the ordinary. No epidemics of any disease occurred, and for the most part the different diseases occurred in normal amounts. The only new disease of economic importance occurring in Kansas for 1917-'18 was the apple disease canker due to *Leptosphaeria coniothyrium*.